AMENDMENTS TO THE CLAIMS

Claim 1 (Cancelled)

2. (Currently Amended) The process for producing a solid catalyst component according to ~~claim 48~~ claim 61, wherein the activated particulate silica used in step (a) is a microspheroidal, porous silica.

3. (Currently Amended) The process for producing a solid catalyst component according to ~~claim 48~~ claim 61, wherein the activated particulate silica used in step (a) has an average particle size ranging from 10 to 120 mm.

4. (Currently Amended) The process for producing a solid catalyst component according to ~~claim 48~~ claim 61, wherein the activated particulate silica used in step (a) has a surface area ranging from 250 to 500 m2/g.

5. (Currently Amended) The process for producing a solid catalyst component according to ~~claim 48~~ claim 61, wherein the activated particulate silica used in step (a) has a pore volume ranging from 1.0 to 2.0 ml/g.

6. (Currently Amended) The process for producing a solid catalyst component according to ~~claim 48~~ claim 61, wherein the organometallic compounds of groups 1, 2, 12 or 13 of the periodic table used in step (a) are

selected from the group consisting of trimethylaluminum, triethylaluminum (TEAL), methylaluminum dichloride, methylaluminum sesquichloride, isobutylaluminum dichloride, isobutylaluminum sesquichloride, ethylaluminum dichloride (EADC), diethylaluminum chloride (DEAC), ethylaluminum sesquichloride (EASC), tri-n-hexylaluminum (Tn-HAL), tri-n-octylaluminum (TnOAL), butyl ethylmagnesium (BEM), butyl octylmagnesium (BOMAG), methylmagnesium chloride and ethylmagnesium chloride.

7. (Previously Presented) The process for producing a solid catalyst component according to claim 48, wherein the magnesium compound used to prepare the solution in step (c) is selected from the group consisting of magnesium dichloride, magnesium diethylate, magnesium di-n-butylate, magnesium diisopropylate and magnesium diisobutylate.

Claim 8 (Cancelled)

9. (Previously Presented) The process for producing a solid catalyst component according to claim 48, wherein the titanium compound used to prepare the solution of the step (c) is selected from the group consisting of titanium tetra-n-propylate, titanium tetra-n-butylate, titanium tetra-i-propylate, titanium tetra-i-butylate or the corresponding titanium mono- or di-chloroalkoxides.

Claim 10 (Cancelled)

11. (Previously Presented) The process for producing a solid catalyst component according to claim 48, wherein the molar ratio Ti/Mg used to prepare the solution of the step (c) is between 0.3 and 4.

12. (Previously Presented) The process for producing a solid catalyst component according to claim 48, wherein the reducing agent used in the step (e) is a Na-alkyl, a Li-alkyl, a Zn-alkyl, a Mg-alkyl and corresponding aryl-derivatives, and compounds of the type RMgX wherein R represents linear or branched alkyl groups containing 1 to 10 carbons or alkyl-derivatives and X is a halogen atom.

13. (Previously Presented) The process for producing a solid catalyst component according to claim 48, wherein the reducing agent used in the step (e) is (CH3)3SiO[(CH3)HSiO]nSi(CH3)3, (CH3HSiO)4, (CH3HSiO)3, H3Si-O-SiH2-OSiH3 or phenylhydropolysiloxanes in which the hydrogen atoms can be partially replaced by methyl Groups and n is the degree of polymerization that ranges from 5 to 100.

Claim 14 (Cancelled)

15. (Previously Presented) The process for producing a solid catalyst component according to claim 48, wherein the halogenating agent used in the step (f) is selected from the group consisting of methylaluminum dichloride, methylaluminum sesquichloride, isobutylaluminum dichloride, isobutylaluminum sesquichloride, ethylaluminum dichloride (EADC), diethylaluminum chloride

(DEAC), ethylaluminum sesquichloride (EASC), SiCl4, SnCl4, HCl, Cl2, HSiCl3, aluminum chloride, ethylboron dichloride, boron chloride, diethylboron chloride, HCCl3, PCl3, POCl3, acetyl chloride, thionyl chloride, methyl trichlorosilane, dimethyl dichlorosilane, TiCl4, VCl4, CCl4, t-butyl chloride, n-butyl chloride, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,2-dichloroethane and dichloromethane.

Claim 16 (Cancelled)

17. (Previously Presented) The process for producing a solid catalyst component according to claim 48, wherein the thermal treatment of step (g) is conducted from 0.5 hour to 5 hours and at a temperature from 60°C to 120°C.

18. (Previously Presented) The process for producing a solid catalyst component according to claim 48, wherein two different organometallic compounds are used in step (i) to wash the solid obtained in step (h).

19. (Previously Presented) The process for producing a solid catalyst component according to claim 48, wherein more than one of the organometallic compounds in ~~the~~ step (i) are fed together, mixed in the same solution.

20. (Previously Presented) The process for producing a solid catalyst component according to claim 48, wherein more than one of the organometallic compounds in step (i) are fed together, in individual solutions.

21. (Previously Presented) The process for producing a solid catalyst component according to claim 48, wherein more than one of the organometallic compounds in step (i) are fed one after the other, in individual solutions.

22. (Previously Presented) The process for producing a solid catalyst component according to claim 48, wherein the organometallic compound used in step (i) is selected from the group consisting of methylaluminum dichloride, methylaluminum sesquichloride, isobutylaluminum dichloride, isobutylaluminum sesquichloride, ethylaluminum dichloride (EADC), diethylaluminum chloride (DEAC), ethylaluminum sesquichloride (EASC), tri-n-hexylaluminum (Tn-HAL) and tri-n-octylaluminum (TnOAL).

23. (Previously Presented) The process for producing a solid catalyst component according to claim 48, wherein the inert organic solvent of step (a) is selected from the group consisting of hexane, heptane, octane or isoparaffin.

Claim 24 (Cancelled)

25. (Previously Presented) The solid catalyst component according to claim 50, wherein the solid catalyst component morphology is spheroidal.

26. (Previously Presented) The solid catalyst component according to claim 50, wherein the solid catalyst component has an average particle size ranging from 10 to 120 mm.

27. (Previously Presented) The solid catalyst component according to claim 50, wherein the solid catalyst component has a surface area ranging from 80 to 300 m2/g.

28. (Previously Presented) The solid catalyst component according to claim 50, wherein the solid catalyst component has a pore volume ranging from 0.1 to 1.0 ml/g.

Claims 29-30 (Cancelled)

31. (Previously Presented) The solid catalyst component according to claim 50, wherein the organometallic compound of the groups 1, 2, 12 or 13 of the periodic table is present in an amount ranging from 0.003 to 0.03 g of metal per g of solid catalyst component.

32. (Previously Presented) The solid catalyst component according to claim 50, wherein the organometallic compound of the groups 1, 2, 12 or 13 of the periodic table is selected from a group consisting of an organo-aluminum, an organo-magnesium, an organo-lithium and an organo-zinc compound.

33. (Previously Presented) The solid catalyst component according to claim 50, wherein the alkoxy groups are present in an amount ranging from 0.03 to 0.08 g of alkoxy groups per g of solid catalyst component.

34. (Previously Presented) The solid catalyst component according to claim 50, wherein the alkoxy groups are selected from the group consisting of n-propoxy, i-propoxy, n-butoxy or i-butoxy.

Claim 35-36 (Cancelled)

37. (Currently Amended) The process for the ~~polymerization and~~ copolymerization of ethylene according to claim 51, wherein said process is carried out in a gas phase.

38. (Currently Amended) The process for the ~~polymerization and~~ copolymerization of ethylene according to claim 51, wherein the catalyst used in the polymerization process is an alkyl aluminum.

39. (Currently Amended) The process for the ~~polymerization and~~ copolymerization of ethylene according to claim 51, wherein the catalyst used in the polymerization process is trimethyl aluminum or triethyl aluminum.

40. (Currently Amended) The process for the ~~polymerization and~~ copolymerization of ethylene according to claim 51, wherein the mass ratio co-catalyst:catalyst in the polymerization process is between 0.5:1 and 6:1.

41. (Currently Amended) The process for the ~~polymerization and~~ copolymerization of ethylene according to claim 51, wherein the catalyst is fed into a polymerization reactor as a dry bulk powder, as a paste, as an oil suspension or as a solvent suspension.

42. (Currently Amended) The process for the ~~polymerization and~~ copolymerization of ethylene according to claim 41, wherein the catalyst is fed directly into a polymerization reactor.

43. (Currently Amended) The process for the ~~polymerization and~~ copolymerization of ethylene according to claim 41, wherein the catalyst is prepolymerized before being fed into a polymerization reactor.

44. (Currently Amended) The process for the ~~polymerization and~~ copolymerization of ~~ethlene~~ ethylene according to claim 41, wherein the catalyst

is prepolymerized with ethylene or propylene before being fed into a polymerization reactor.

45. (Previously Presented) A linear low density polyethylene produced according to claim 51.

46. (Previously Presented) A linear medium density polyethylene produced according to the process of claim 51.

47. (Currently Amended) A high density polyethylene homopolymer produced ~~according to the process of~~ claim ~~51.~~ from the catalyst composition of claim 65.

48. (Currently Amended) A process for producing a solid catalyst component which is substantially free of polar solvents and which is used in the ~~polymerization of~~ copolymerization of ethylene ~~which is substantially free of polar solvents which comprises:~~ with one or more alpha-olefins, which consists essentially of:

(a) impregnating an activated particulate silica with a solution of an organometallic compound of the group 1, 2, 12 or 13 of the Periodic Table in an inert organic solvent;

(b) removing ~~an impregnanted~~ the impregnating liquid from step (a);

(c) preparing a solution by reacting at least one magnesium compound selected from the group consisting of magnesium chloride and magnesium alkoxides with at least one titanium compound selected from the group consisting of titanium alkoxides and titanium chlorine alkoxides;

(d) impregnating the silica obtained in (b) using the solution prepared in (c), said silica containing magnesium in an amount of 0.3 to 3.0 % by weight and titanium in an amount of 0.5 to 2.0 % by weight, based on the weight of the catalyst;

(e) optionally reacting the impregnated solid obtained in (d) with a reducing agent in an amount of from 0 to 2 moles per mole of titanium; and

(f) reacting the impregnated solid produced in (d) or (e) with a chlorine containing agent to produce a chlorine content in an amount of 5 to 12 % by weight, based on the weight of the catalyst;

(g) thermally treating the impregnated solid produced in (f);

(h) washing the thermally treated solid produced in (g) with an inert organic solid; and

(i) optionally washing the solid produced in (h) with a solution of one or more organometallic compounds of groups 1, 2, 12 or 13 of the Periodic Table.

49. (Previously Presented) The process of claim 48 wherein the activated particulate silica is produced by heating silica in an inert atmosphere at a temperature of 100 to 750°C and for a period such that the amount of OH remaining on the silica surface after this treatment ranges from 0.1 to 2 mmoles OH per g of silica.

50. (Currently Amended) A solid catalyst component used in the ~~polymerization or~~ copolymerization of ~~ethylene~~ ethylene, produced by the process of ~~claim 48.~~ claim 61.

51. (Currently Amended) A process for the ~~polymerization or~~ copolymerization of ethylene which comprises conducting the ~~polymerization or~~ copolymerization in the presence of the activated particulate silica catalyst produced by the process of claim 61. ~~claim 48.~~

Claim 52 (Cancelled)

53. (Currently Amended) The catalyst composition of ~~claim 52,~~ claim 58, wherein magnesium is obtained from magnesium chloride or magnesium alkoxides.

54. (Currently Amended) The catalyst composition of ~~claim 52,~~ claim 58, wherein the titanium is obtained from titanium alkoxides or titanium chlorine alkoxides.

55. (Currently Amended) The catalyst composition of ~~claim 52,~~ claim 58, wherein the chlorine is obtained from a chlorine-containing agent.

56. (Currently Amended) The catalyst composition of ~~claim 52,~~ claim 58, wherein the magnesium is present in an amount of 0.3 to 1.5 % by weight.

57. (Currently Amended) The catalyst composition of ~~claim 52,~~ claim 58, wherein the chlorine is present in an amount of 5 to 10.8 % by weight.

58. (Currently Amended) A catalyst composition substantially free of polar solvents and used for the ~~polymerization and~~ copolymerization of ~~olefins which comprises~~ ethylene with one or more alpha-olefins, which consists essentially of

an activated particulate silica carrier, impregnated with an ~~organic~~ organo metallic compound and catalytic active components including magnesium, titanium and chlorine, wherein, based on the weight of the catalyst, titanium is present in an amount of 0.5 to 2 % by weight, magnesium is present in an amount of 0.3 to 3.0 % by weight and chlorine is present in an amount of 5 to 12% by ~~weight.~~ weight, wherein a product of said copolymerization exhibits an enhanced bulk density, a small amount of fines and a substantially homogeneous distribution of the alpha-olefins within the polymer chain.

59. (Currently Amended) The catalyst composition of claim 58, wherein the resulting copolymer is a LLDPE copolymer. ~~polyolefin is HDPE and LDPE.~~

60. (Currently Amended) A process for the ~~polymerization or~~ copolymerization of ethylene which comprises conducting the ~~polymerization or~~ copolymerization in the presence of the activated particulate silica catalyst of ~~claim 52.~~ claim 58.

61. (Currently Amended) A process for producing a solid catalyst component which is substantially free of polar solvents and which is used in the ~~polymerization or~~ copolymerization of ethylene and ~~which is substantially free of polar solvents, which comprises:~~ with one or more alpha-olefins, which consists essentially of

(a) impregnating an activated particulate silica with a solution of an organometallic compound of the group 1, 2, 12 or 13 of the Periodic Table in an inert organic solvent; and

(b) further impregnating the silica with at least one magnesium component selected from the group consisting of magnesium chloride and magnesium alkoxide, at least one titanium component selected from the group consisting of titanium alkoxides and titanium ~~alkomine~~ chlorine alkoxides and a chlorine-containing agent to obtain silica with a magnesium content of 0.3 to ~~2.0 %~~ 3.0% by weight, a titanium content of 0.5 to 2.0 % by weight and a chlorine content of an amount of 5 to 12 % by weight, based on the weight of the ~~catalyst.~~ catalyst, wherein a product of said copolymerization exhibits an enhanced bulk density, a small amount of fines, and a substantially homogeneous distribution of the alpha-olefin within the polymer chain.

62. (New) The catalyst composition of claim 58, wherein the product of said copolymerization has a fraction soluble in xylene of equal to or less than 10%, a polymer density of 0.917 to 0.919 g/cm^3, and a melt index of 0.65 to 0.91 g/10 min.

63. (New) The catalyst composition of claim 58, wherein the bulk density is equal to or greater than 0.36 g/cm^3.

64. (New) The catalyst composition of claim 58, wherein the product of said copolymerization has a melt flow rate (MFR) of less than 27.

65. (New) A catalyst composition substantially free of polar solvents and used for the homopolymerization of ethylene which consists essentially of
an activated particulate silica carrier, impregnated with an organo metallic compound and catalytic active components including magnesium, titanium and chlorine, wherein, based on the weight of the catalyst, titanium is present in an amount of 0.5 to 2 % by weight, magnesium is present in an amount of 0.3 to 3.0 % by weight and chlorine is present in an amount of 5 to 12% by weight, wherein a product of said homopolymerization exhibits a narrow molecular weight distribution, an enhanced bulk density and a small amount of fines.

66. (New) The catalyst composition of claim 65, wherein the Mg is present in an amount of 0.3 to 1.5% by weight

67. (New) The catalyst composition of claim 65, wherein the bulk density is equal to or greater than 0.36 g/^{3}cm .

68. (New) The catalyst composition of claim 65, wherein the product of said homopolymerization has a melt flow rate (MFR) of less than 27.

69. (New) The catalyst composition of claim 65, wherein the resulting homopolymer is HDPE.

70. (New) The process of claim 61, wherein the product of said copolymerization has a fraction soluble in xylene of equal to or less than 10%, a polymer density of 0.917 to 0.919 g/cm^3, and a melt index of 0.65 to 0.91g/10 min.

71. (New) A linear low density polyethylene copolymer produced from the catalyst composition of claim 58.

72. (New) A linear low density polyethylene film produced from the catalyst composition of claim 58.

73. (New) The linear, low density polyethylene film of claim 72, having a haze value of 11.3 to 11.6%, a gloss of 79.3 to 80.7% and a blocking strength of 15 to 30 g/100 cm^2.